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OBSERVATIONS ON VAGINAL TRICHOMONIASIS
I. IN PREGNANCY*

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VAGINAL trichomoniasis is undoubtedly the most common infection to which the pregnant woman is subject. Since the existing literature contains no information to indicate whether or not this particularly common maternal infestation is associated with disease in the newborn, an investigation of this problem was carried out in the Dalhousie Prenatal Clinic and the wards of the Grace Maternity Hospital in Halifax. Funds were provided by a National Health Grant, and a laboratory was set up where a successful technique for culturing the organism was evolved.

METHOD

All new admissions to the prenatal clinic were examined, the presence or absence of vaginal symptoms was determined, a direct wet smear from the vagina was examined microscopically, and vaginal secretions were inoculated by means of a swab into: (1) simplified trypticase serum medium for vaginal trichomonads and (2) thioglycollate broth medium for general bacteria. After suitable incubation periods the trichomonads were identified microscopically and the bacteria were plated on to blood agar for identification.

These examinations were repeated on admission to hospital for delivery, and the lochia was also similarly cultured at approximately the seventh postpartum day.

These studies were continued for a year, from July 1959 to July 1960. During this time all the babies were observed closely for evidence of illness or infection. A similar culturing program was conducted using oral, umbilical, and vulvovaginal swabbings from abnormal babies.

Only prenatal patients complaining of symptoms were treated.

After a year during which nearly 500 patients were studied in this manner, the bacterial studies were discontinued; but culturing for Trichomonas was continued as the information so obtained was useful in relation to further investigations of an epidemiological nature, which were initiated at that time.

TABLE I.—PRENATAL CASES

Positive for *Trichomonas vaginalis*	429	47.8%
Negative for *Trichomonas vaginalis*	468	52.2%
Total	897	100.0%

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RESULTS

Table I shows the total number of pregnant patients studied to date and the numbers and percentage of those with and without *Trichomonas vaginalis* infestation.

Table II shows the types of bacteria found in the first 473 cases and the frequency with which these organisms were demonstrated. It will be seen that there was no difference in the vaginal bacterial flora between those patients with and those without Trichomonas infestation.

There were so few babies affected in any way that no correlation could be made between any neonatal lesion and the presence of maternal trichomoniasis. In no case was *Trichomonas vaginalis* grown from a neonatal source.

TABLE II.—RESULTS OF BACTERIAL AND TRICHOMONAS CULTURES IN 473 PRENATAL CLINIC PATIENTS

Bacteria	*Trichomonas positive*	*Trichomonas negative*
Staph. albus	74.4%	67.3%
Staph. aureus	11.1	5.3
E. coli	31.1	31.0
Lactobacillus	7.9	11.7
Yeast	15.0	17.6
Gram-positive diplococci	11.1	13.3
Gram-negative diplococci	3.8	4.8
Streptococci	5.9	5.3
Spore-bearing aerobes	11.6	18.6
Gram-positive bacilli	1.0	—
L. organisms (P.P.L.O.)	1.5	—
Diphtheroids	—	0.6
Gram-negative rods	—	0.6
Trichomonas vaginalis	286 cases	187 cases

No correlation could be demonstrated between maternal morbidity and the presence of *Trichomonas vaginalis*. This observation confirms the work of Trussell *et al.*[1]

Table III gives the percentage of lochia specimens showing *Trichomonas vaginalis*. This is roughly 8% less than the incidence of prenatal infestation, and, appropriately, this agrees with the percentage of patients with symptoms and, therefore, the percentage treated.

TABLE III.—LOCHIA CULTURES FOR TRICHOMONAS VAGINALIS

Positive	160 cases	39.5%
Negative	245 cases	60.5%
Total	405 cases	100.0%

The vaginal pH was studied in a small group of these cases. Here again, no correlation was found between those patients with and those without *Trichomonas vaginalis* infestation. The overall pH range in both groups was between 4.5 and 7.5.

CONCLUSIONS

Trichomonas vaginalis was present in the vagina of half the women attending the Dalhousie Prenatal Clinic. It occurred more commonly, therefore,

than any of the so-called "normal" vaginal inhabitants.

The range of vaginal bacteria in this group of pregnant patients was wide, and was unrelated to the presence of *Trichomonas vaginalis.*

The pH range of the vaginal secretions in these patients was also wide and it too was unrelated to the presence of *Trichomonas vaginalis.*

There appears to be no "favourable" pattern of vaginal flora or acid-base reaction which encourages the growth of *Trichomonas vaginalis.*

Maternal trichomoniasis has no effect on the newborn, nor does it produce a bacterial situation which is significant for the newborn.

DISCUSSION

These findings confirm certain previous observations and provide some new information concerning human trichomoniasis. It is to be noted that these data relate to the population of a free prenatal clinic consisting for the most part of a below-average income group. Similar information being compiled on private patients in the same city appears to show a lower incidence of infestation by *Trichomonas vaginalis.*

Unfortunately, almost nothing is known of the natural history of vaginal trichomoniasis, the life cycle of the flagellate, alternative natural growth sites (if any), or the epidemiology and pathology of trichomonal vaginitis. The studies of Trussell[2] and others seem to indicate that *Trichomonas tenax* and *Trichomonas hominis,* the other trichomonads found in man, are not identical with and do not become converted to *Trichomonas vaginalis.* Nor are these three flagellates apt to be confused morphologically, in culture, or in infested sites in human hosts.

Opinion is divided between those who consider that *Trichomonas vaginalis* infestation is a venereal disease[3, 4] and those who maintain that the condition is psychosomatic.[5, 6] As we have gained experience in studies on this organism, we have become increasingly skeptical of either view. Much more basic scientific information is needed, and for this purpose a number of continuing studies are being conducted on both males and females in other population samples in Halifax, in an endeavour to obtain factual epidemiological information from which valid conclusions may be drawn. We know that *Trichomonas vaginalis* survives when placed (mistakenly) in our laboratory deep-freeze, but we have been completely unsuccessful in trying to obtain positive cultures from recently used clothing, bedding and appliances. Contrary to the experience of others, we have been generally unsuccessful in recovering these organisms from men.

Metronidazole is a very promising form of treatment for trichomoniasis, even the most stubborn symptomatic cases usually responding most satisfactorily to its administration.

Experiences with the use of metronidazole, particularly in the treatment of trichomoniasis in pregnant women, will be described in a subsequent report.

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PAGES OUT OF THE PAST: FROM THE JOURNAL OF FIFTY YEARS AGO

SOCIAL PROBLEMS IN RELATION TO MEDICINE

In order to convey a clear idea of the practical nature of the work of the Boston Social Service Department, not only in regard to tuberculosis, but in other directions, I shall refer to some discrepancies which Mr. G. K. Chesterton has commented on in connexion with certain medical examinations which are frequently inflicted upon the poor of London:

"The son of a widow, a needlewoman, let us say, is sent by a strict law to a special school. It is there discovered that he cannot see the blackboard very plainly. A doctor descends upon the widow, and tells her to take her son to some remote hospital to be examined. She does so, and most probably she finds she cannot be attended to. She has to travel to the distant hospital again and perhaps again, spending sums on trams and trains which correspond to a five-pound note for you and me. Eventually her son's eyes are examined, and there is an end of the matter, for although that happy youth has the rapture of regarding a precise definition on paper of the sort of glasses he ought to have, his mother is no more capable of buying them than she is of buying champagne or diamond shirt-links. If she wants the simplest medical apparatus, she must fall back upon one of the most elaborate and fantastic of all forms of individual charity.

"I have taken this one case of medical examination among the poor because it happened to come my way; but the thing is being done everywhere, in every shape, and in every department. Officials come round and leave little cards about the hygienic way in which to give children food. They leave the cards; they do not leave the food. Lady scientists come round with bright, little essays about milk; they do not come round with the milk. Poor children are told in laundry classes to pass a garment through three waters, but nobody gives them so much as one water. Children are told in cookery classes to pass a viand from a saucepan to a stewpan; but nobody offers to lend them even the saucepan."

The Boston Social Service Department, on the other hand, steps in and endeavours to make it possible to procure the spectacles, the milk, the bread, the water, the saucepan, or whatever it may be, by arranging for and securing the logical and intelligent coöperation of the family, relatives, friends, beneficent organizations, or any other agencies which can be induced to interest themselves in the patient's cause; and if necessary the municipality or state is called into requisition.—Richard Monahan, *Canadian Medical Association Journal,* 1: 337, April 1911.